

NEW ENGLAND NOTE

NOTES ON THE HABITS AND LIFE-HISTORY OF *BIDENS DISCOIDEA*: AN EPIPHYTE IN MASSACHUSETTS FLOODPLAIN PONDS

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Bidens discoidea (T. & G.) Britton is uncommon or undercollected in Massachusetts and in need of attention from field botanists to clarify its status in the state (Sorrie 1990; P. Somers, pers. comm.). It resembles the common *B. frondosa* L. for which it is easily mistaken. However, the two species are readily identified in the field by the number of outer involucre bracts: three to five in *B. discoidea*, and five to ten in *B. frondosa*.

Bidens discoidea is an annual whose range covers much of the eastern half of the United States and adjacent Canada (Gleason and Cronquist 1991). Wiegand (1899) considered the species to be "quite rare in New England" and more common in the western part of its range where it grows on logs and stumps in lakes and bogs. In the southeastern Coastal Plain it is found "usually on fallen logs and stumps in swamps" (Fernald 1936) and is "conspicuous" in freshwater tidal swamps (Beaven and Oosting 1939).

Sorrie (1990) commented that he was aware of four extant Massachusetts stations for *Bidens discoidea* and noted habitats as ponds, oxbows, and buttonbush (*Cephalanthus occidentalis* L.) swamps. He also noted an occurrence of it growing as an epiphyte, but provided no further details. Robert Bertin (pers. comm.) recently found previously undocumented populations of *B. discoidea* on the shores of a cluster of beaver ponds in Worcester County, Massachusetts, most commonly growing on partially submerged stumps and logs, but occasionally on shoreline soils.

Bidens discoidea is common on floodplain ponds along the Nashua River on land now or formerly part of the Fort Devens Military Reservation in Worcester and Middlesex Counties, Massachusetts. Here, the species is found almost exclusively growing as an epiphyte on *Cephalanthus occidentalis* and was observed on 13 out of 15 floodplain ponds inventoried in 1995 and 1996. In these ponds, water levels typically decline a meter or more between spring and late summer, but levels fluctuate during the growing

season in response to precipitation patterns (M. Hickler, unpubl. data). Shoreline vegetation in these ponds often includes dense thickets of *C. occidentalis*. At least three species of moss [*Climacium americanum* Brid., *Drepanocladus aduncus* (Hedw.) Warnst. var. *kneiffi* (Schimp. in B.S.G.) Mönk., and *Dichelyma capillaceum* (With.) Myr.] grow on *Cephalanthus* stems, where they form dense tufts, concentrated around the normal high water mark.

Bidens discoidea has a strategy for avoiding the stresses associated with unpredictable hydrology and light competition from *Cephalanthus* in this habitat. The awned achenes, which are well adapted for dispersal by hitchhiking on passing animals, are also perfectly pre-adapted to lodge in the thick tufts of moss. Achenes germinate in their mossy seedbeds after water levels begin to recede in the spring but long before ground-level soil has drained. The roots then follow the receding water toward the ground (M. Hickler, pers. obs.). Perched high in the *Cephalanthus* stems, the aerial portions of the plants are above the influence of flooding and in position to penetrate through the dense *Cephalanthus* canopy to where there is ample sunlight. By late summer, *B. discoidea* plants can be seen throughout the *Cephalanthus* swamps with their tops above the shrub canopy in full sunlight and roots projecting down, sometimes a meter or more, to the soil.

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